REMARKS

Claims 30-38, 40-44 and 46-48 are active.

Claim 30 is amended based on original Claim 9, page 4, lines 29-31 and page 7, lines 29-35.

The remaining changes are based on the amendments to Claim 30 and for clarity so as to address the rejection of Claims 42-44 under 35 USC 112, first paragraph, the rejection of Claims 33-37 and 48 under 35 USC 112, second paragraph, and the rejection of Claims 34-36 under 35 USC 112, fourth paragraph.

No new matter is added.

In the Official Action, the Examiner has maintained the obviousness rejection in view of Uemura and Okudaria applying it to the amended claims Applicants submitted previously. See the rejection starting on page 7 of the Official Action. It was this primary combination of references that was discussed in the interview held on October 13, 2011. During this interview, the amendment to Claim 30 as submitted herein was discussed, the inapplicability of Okudaria's teachings was discussed, and the comparative data presented in the specification was discussed. These points are expanded upon in the remarks below.

In addition, the Examiner cites to several other references to reject various combinations of the dependent claims, see the Official Action starting on page 10.

The Examiner finds that Uemura teaches etching a silicon layer to activate the sublayer while acknowledging that Uemura does not teach the use of a fluorine-containing plasma. Thus, the Examiner relies on Okudaira to argue that using such a fluorine-containing plasma in Uemura would have been obvious. See the discussion on page 8 of the Action. As stated clearly in Claim 30, the treatment allow the sublayer to be etched, which means that the surface of the sublayer is rendered rough by the treating with the plasma, as is described page 12 of the English description and as set forth in the amended Claim 30 (RMS

roughness). This is important because Okudaira teaches a process for etching a layer in which all the silicon containing layer is removed by the plasma on some parts of the substrate, so that patterning or even perforation of the substrate is achieved (see col. 1 l. 10-15). The purpose of Okudaira is therefore not to make the surface of the layer rough but to remove the layer entirely. Okudaira is silent about the possibility to render the surface of the silicon oxide rough with such a plasma treatment. On the contrary, as the disclosure of Okudaira relies clearly on a process that enables the skilled one to completely remove the layer, one of skill would have been discouraged to combine this teaching with that of Uemura with the aim to create a fine unevenness to the surface of the layer. One of skill in the art would understand that the plasma treatment is too aggressive for such a purpose.

Furthermore, Applicants do not agree that Okudaira discloses nor leads to the use of a plasma from a mixture of a fluorocarbonated gas (such as CF_4 or C_2F_6) with oxygen, with the aim to increase the roughness of the surface (instead of removing the whole layer). Column 2 lines 53-col 3 line 6 teaches that the use of freons gases is known for the etching (removal) of a SiO_2 layer, but does not disclose a combination of that gas with oxygen not to etch but to enhance the RMS roughness of the surface of the same layer.

Still further, Applicants have already explained the comparative data of record in this case. The Examiner has failed to take into consideration the comparative data presented in the specification that demonstrates the improved nature of activation treatment of the silicon layer compared to the silicon layer not treated in this manner. The Examiner's comments in the last paragraph of page 3 of the Action that the advantages would "flow naturally from the suggestion of the prior art" is improper. As stated in In re Sullivan, 84 USPQ2d 1034 (Fed. Cir. 2007):

> It is well settled that the PTO "bears the initial burden of presenting a prima facie case of unpatentability… . However, when a prima facie case is made, the burden shifts to the applicant to come forward with evidence and/or argument supporting patentability." *In re Glaug*, 283 F.3d 1335, 1338 (Fed.

Cir. 2002). Rebuttal evidence is "merely a showing of facts supporting the opposite conclusion." *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). Evidence rebutting a prima face case of obviousness can include: "evidence of unexpected results," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1369 (Fed. Cir. 2007), evidence "that the prior art teaches away from the claimed invention in any material respect," *In re Peterson*, 315 F.3d 1325, 1331 (Fed. Cir. 2003), and evidence of secondary considerations, such as commercial success and long-felt but unresolved needs, *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). When a patent applicant puts forth rebuttal evidence, the Board must consider that evidence. *See In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995) (stating that "all evidence of nonobviousness must be considered when assessing patentability"); *In re Sernaker*, 702 F.2d 989, 996 (Fed. Cir. 1983) ("If, however, a patent applicant presents evidence relating to these secondary considerations, the board must always consider such evidence in connection with the determination of obviousness.").

Rather than considering Applicants' showing of unexpected results as rebuttal evidence to an alleged *prima facie* case, the Examiner has dismissed it and has been convinced that unexpected results cannot exist when an alleged *prima facie* case has been established. This is clear legal error.

In addition to their explanation as to why there is no *prima facie* case, Applicants have shown an unexpected improvements. The Examiner has put forth no reasoning that would support a conclusion that, *looking forward*, such an improvement would have been expected from the combination of Uemura and Okudaira. Rather, the Examiner looks backwards and concludes that because it is his opinion that the references present a *prima facie* case any property, benefit, or characteristic of the invention Applicant wishes to discuss in rebuttal is meaningless. This is improper and, at best, is a classic case of requiring comparison of the results of the invention with the results of the invention. See MPEP 716.02(e) and *In re Chapman*, 357 F.2d 418, 148 USPQ 711 (CCPA 1966).

Applicants have clearly shown by the examples that the to obtain the best performances of the hydrophobic coating the nature of the silicon containing sublayer, and more particularly to a specific roughness (as measured by the RMS roughness) are important.

Applicants have demonstrated that this roughness can only be obtained if very specific process conditions are implemented. More particularly, as is now defined in the, the RMS roughness can be obtained if a combination of a CF4, or C2F6 with oxygen is used as the plasma gas.

Referring first to example 1, after the treatment by the C^2F^6/O^2 plasma, the etched silicon oxide exhibits a surface RMS Roughness of about 6 nm (see table 2 page 12) whereas the RMS Roughness of the initial layer (before the engraving) was only about 2 nm. The roughness of the layer is then multiplied by 3 by the treatment.

The results shown thereafter in table 3 and table 4 of the specification (together with the following explanations) prove that the substrate equipped with the engraved SiO_2 sublayer (that is with a roughness RMS increased to a value of 6 nm) exhibit improved combined properties to the mechanical tests (Opel and Taber) and to the accelerated environmental tests WOM, QUV and NSS.

In the other examples, it is clear that the best properties of the coatings in terms of the several tests that were measured were achieved when the process employed a combination of C^2F^6 or CF^4 with O_2 as the plasma:

page 18 lines 17-20, in connection with the results presented in Table 6 clearly demonstrate that the improvements were obtained for sample III (80% C_2F_6-20%O_2 plasma gas) and for sample IV (50% C_2F_6-50%O_2 plasma gas),

page 21, in connection with the results presented in Table 9 show that the sample X, treated with an activation plasma comprising a mixture of C_2F_6 and O_2, exhibit a surface with increased roughness, so that an increased amount of fluorine-comprising compound can be further grafted on the rough surface of the silicon-containing sublayer. Sample XI was obtained with a plasma that only contains C_2F_6, Sample XIII with a SF_6 plasma, Sample XIV with an O_2 plasma (as taught by Uemera). None of these comparative examples enabled the

required roughness of the surface, as is demonstrated by the low amount of fluorine compound that can be grafted on the layer after treatment. More particularly, sample XIV demonstrates and confirms the statements made in the declaration, which is that a mere oxygen plasma cannot lead to the engraving of a silicon oxide layer till a roughness of a few nanometers. The Examiner rejected the Declaration because it is alleged to be deficient in the formalities. However, what the Examiner failed to appreciate is that the original French language Declaration was signed and dated and there is, in fact, a statement affirming the validity of the contents of the Declaration even if it is not in the "form" that is typical of statements submitted to the USPTO

The addition of Anazaki, Lopata, Akamatsu, Chartier, Murphy, Nakamura do not remedy the core deficiencies of Uemura and Okudaira nor provide any basis to rebut Applicants showing of improved results that resulted from the claimed process.

In view of the above, withdrawal of the rejections is requested.

Applicants respectfully submit that the above-identified application is now in condition for allowance.

Respectfully Submitted,

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